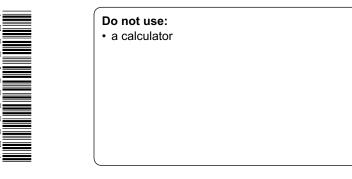


GCSE (9-1) Computer Science

J276/01 Computer systems

Monday 14 May 2018 - Morning

Time allowed: 1 hour 30 minutes





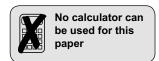
First name	
Last name	
Centre number	Candidate number

INSTRUCTIONS

- Use black ink.
- · Complete the boxes above with your name, centre number and candidate number.
- · Answer all the questions.
- Write your answer to each question in the space provided. If additional space is required, use the lined page(s) at the end of this booklet. The question number(s) must be clearly shown.
- · Do **not** write in the barcodes.

INFORMATION

- The total mark for this paper is 80.
- The marks for each question are shown in brackets [].
- Quality of written communication will be assessed in this paper in questions marked with an asterisk (*).
- · This document consists of 12 pages.





Answer all the questions.

William is creating a film for a school project using a digital video camera.

The	digital video camera has a secondary storage device.
(i)	Explain why the digital video camera needs secondary storage.
	[2]
(ii)	The digital video camera uses solid state storage.
	Explain why solid state storage is the most appropriate type of storage for the digital video camera.
	[4]
Will	iam transfers the videos to a computer for editing.
(i)	The computer has 1GB of storage free.
	Calculate the number of videos that could be stored on the computer if each video was 100MB in size.
	Show your working.
	[2]
	(ii)

1

- (ii) A program needs to calculate the size of files in bytes. The program must:
 - o Ask the user to input a file size in megabytes
 - o calculate and output the number of bytes this represents in a user friendly format (e.g. "There are 5242880 bytes in 5MB").

		Write an algorithm using pseudocode to calculate the number of bytes in a given number of megabytes.
		[6]
c)	Will	iam's computer has utility programs installed including automatic backup.
	(i)	William can choose between a full or incremental backup.
		Identify the backup method William should use to backup the computer, justifying your choice.
		Method:
		Justification:
		[3]
		[0]

	(ii)	Give one additional utility program William could make use of and describe how he would use it.
		Utility program:
		Description of use:
		[3]
(d)		iam wants to upload his videos on the Internet and is considering releasing them under a ative Commons license.
	Exp peo	lain how a Creative Commons license will impact the use of William's videos by other ple.
		[3]

		has computers in each room and a central router. Ennections to the router.	Every room a	allows both E	Ethernet and
(a)		ntify if the house network is a LAN (local area netwitify your choice.	ork) or a W	AN (wide are	ea network).
	Net	work type:			
	Jus	tification:			
					[3]
(b)	The	e following table has descriptions of Ethernet and WiF	Fi.		
	Tick WiF	x (✔) one box in each row to identify if the description.	n is more ap	propriate fo	Ethernet or
		Description	Ethernet	WiFi	
		A wired connection			
		More likely to be affected by interference			
		Data can be transmitted at a faster speed			
		Wireless transmission			
		Shorter transmission range before data is lost			
(c)	(i)	Describe the purpose of the router in the house's ne	etwork.		[5]
	(ii)	Identify two additional items of network hardware, may be used within the house network.	apart from o	cables and a	a router, that
		1			
		2			[2]

(d) A user enters a uniform resource locator (URL) into a web browser on one of the computers in the house. A system is then used to find the IP address of the web server associated with

the	URL.
(i)	Name the system which matches URLs to IP addresses on the web.
	[1]
(ii)	The following statements describe what happens after the IP address has been found and returned to the user's computer.
	There are five missing statements in the table.
	Write the letter of the missing statements from the table in the correct place to complete the description.
	1 The request is put into packets
	2
	3 The packets are sent across the network
	4
	5
	6 If they have not arrived:
	7 A timeout is sent to request the packets are resent
	8 If they have arrived:
	9
	10

Letter	Statement
Α	The server checks if all the packets have arrived
В	The packets are put in order
С	The request is processed by the web server
D	The packets are received by the host server
E	Each packet is given the address and a number

to the Internet.

(e) The house owner is concerned about potential threats to the network from being connected

(i)	Describe three possible threats to the computers connected to the network and give one way each threat can be reduced or prevented.
	Threat 1
	Prevention
	Threat 2
	Prevention
	Threat 3
	Prevention

8 A small island has 100 people living on it. The island has just been connected to the Internet, after previously having no Internet or mobile phone signal. Discuss the impact on the island's inhabitants and businesses of getting access to the Internet. In your answer you might consider the impact on: inhabitants businesses ethical issues privacy issues

.....[8]

Alic	Alicia has designed a computer using Von Neumann architecture.		
(a)	Describe the purpose of two registers that are used by Von Neumann architecture.		
	1		
	2		
<i>a</i> . \	[4]		
(b)	The CPU has a clock speed of 3.8 GHz.		
	Describe what is meant by a clock speed of 3.8 GHz.		
	[2]		
(c)	Alicia says: "My computer has a quad-core processor, so it will run twice as fast as a computer with a dual-core processor."		
	Explain why this statement is not always true.		
	[3]		

(d)		computer will only have 2GB of RAM, but Alicia says that virtual memory can be used ead of adding more RAM.
	(i)	Explain how virtual memory can compensate for the lack of RAM in Alicia's computer.
		[3]
	(ii)	Explain why it would be beneficial for Alicia to get more RAM instead of relying on virtual memory.

Wh	en co	onnecting computers into a network, the use of appropriate protocols are important.
(a)	Exp	plain what is meant by a protocol.
		[2]
(b)		each of the scenarios below, identify the most appropriate protocol to be used and explair function of the protocol.
	(i)	A user wants to transfer a file directly from his computer to his friend's computer.
		[2]
	(ii)	A customer wants to securely log into her bank's website to check her account balance.
		[2]
(c)	_	plain the difference between how the IMAP (Internet message access protocol) and SMTF apple mail transfer protocol) protocols are used.

END OF QUESTION PAPER

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ADDITIONAL ANSWER SPACE

If additional space is required, you should use the following lined page(s). The question number(s must be clearly shown in the margin(s).		

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